CHAPTER 5
STARTUP AND ALIGNMENT
LESSON PLAN 5

METHOD:

Conference, demonstration, and practical exercise

TIME ALLOTTED:

3.0 hours

COURSE PRESENTED TO:

a. BFV crews
b. Instructors
c. TSC personnel

TOOLS, EQUIPMENT, AND MATERIALS:

See Appendix A

PERSONNEL:

a. Primary instructor
b. Assistant instructor

INSTRUCTIONAL AIDS:

a. Overhead projector
b. Viewgraphs (Appendix E)

REFERENCES:

a. TM 9-6920-710-12&P-1, Chapter 2
b. TM 9-6920-711-12&P-1
c. TM 9-2350-252-10-1/2
d. TM 9-2350-284-10-1/2
e. FM 23-1

APPENDICES:

Appendix A. Tools, Equipment, and Materials
Appendix B. Safety
Appendix C. TDRS Memory Card Setup
Appendix D. Test Administration Guide
Appendix E. Viewgraphs

5-1. INTRODUCTION. (5 minutes)

Note. Show Slide 1.

a. **Reason.** To achieve realistic and effective training with PGS, BFV crews must be able to correctly start, align, and verify alignment of PGS to the BFV's turret weapons.

Note. Show Slide 2.

b. **Training Objective.** Given an operational M2/M3 BFV with PGS installed, prepare-to-fire checks and boresighting completed, the crew will perform the following tasks:

(1) Conduct system startup IAW TM 9-6920-710-12&P-1, Chapter 2, in preparation for alignment.
(2) Conduct system alignment IAW TM 9-6920-710-12&P-1, Chapter 2, in preparation for training.
(3) Perform alignment verification of PGS.

c. **Procedure.** During this block of instruction we will cover the startup and alignment of PGS in preparation for gunnery training. You will have an assistant (small group) instructor for the practical exercise portion of this lesson. After completion of training, you will be evaluated on your ability to align PGS to the BFV. You will use the appropriate TMs to align PGS.

5-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE. (155 minutes)

Notes. 1. The primary instructor will release the student crews to their assigned assistant (small group) instructors for the practical exercise portion of this lesson.
2. Show Slide 3.

a. **Control Panel.** The control panel is the crew interface with PGS during training.

(1) **Control panel features.**

(a) Display screen for numerical and graphical presentation of results and information
(b) Four pushbuttons to interface/communicate with the system
(c) Slot for TDRS memory card
(d) Eject button for removal of memory card
(e) Fixed cable for connection to the system

Note. Show Slide 4.

5-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

(2) **Control panel functions.**

(a) Monitor and upload of ammunition. During training, ammunition can be monitored and uploaded (from hull to turret) by crew using the control panel.

(b) Result presentation. Firing results or target vehicle results can be presented to the crew either in numerical or graphic form.

(c) System alignment. PGS is aligned by the crew prior to training using the control panel.

(d) BIT and error presentation. When an error occurs, the control panel presents a pop-up menu with the error listed. The control panel also allows the crew to manually initiate BIT.

(e) Controller functions. The control panel allows the instructor, using a CGUN, to upload ammunition, set time, etc. during training without the use of the TDRS computer unit.

(f) Data storage. The TDRS memory card in the control panel contains firing and target vehicle application data and exercise events collected during training. The stored training exercise events can be retrieved for AAR with the TDRS computer unit.

Note. Show Slide 5.

(3) **Control panel menus.** The control panel display screen is divided into several areas which have different functions.

F = Main function modes
SF = Sub-function of selected main function mode
T = Text area
S = Selection

Note. Show Slides 6 and 7.

(4) **Pushbutton functions.**

(a) ENTER pushbutton.

1. Gives access to menus highlighted by cursor
2. Saves/accepts data

(b) ESC pushbutton.

1. Aborts menu
2. Inhibits function or selection without saving data

(c) DOWN/LEFT pushbutton.

1. Moves cursor down or left in menus
2. Decreases values for data selected

(d) UP/RIGHT pushbutton.

1. Moves cursor up or right in menus
2. Increases values for data selected

Note. If a pushbutton is continuously pressed, a function will be repeated until pushbutton is released.

b. **Startup and Alignment.** This is the most important step in preparing PGS for operation. Many factors can be induced that will degrade performance and produce incorrect training results.

Note. Show Slide 8.

(1) **System startup.** Switch vehicle master power switch to ON position. Power is applied to PGS.

Note. Show Slide 9.

(2) **Built-in test (BIT).** A built-in test is automatically performed when the system is powered up. If there is an error within the system, it will be announced with the following indications:

(a) Pop-up screen on the control panel
(b) Sound indication on vehicle intercom
(c) Visual indications in retro detector units

Note. Show Slide 10.

(3) **System error.** If a system error appears do the following:

(a) Consult TM 9-6920-710-12&P-1, Chapter 3, for troubleshooting procedure based upon the BIT indication provided on the control panel.

Warning. Ensure that vehicle master power switch and turret power switch are in OFF position before connecting or disconnecting cables. Failure to follow this warning may result in injury or death to personnel if turret or 25 mm gun move suddenly.

5-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

(b) Do not connect or disconnect PGS cables with vehicle master power switch and turret power switch and turret power switch in ON position.

Note. Show Slide 11.

(4) **Alignment.**

(a) Alignment is the process where PGS is aligned to the BFV's turret weapons. This is done electrically/optically with the turret weapons set to a predetermined value.

Note. Show Slide 12.

(b) The following vehicle settings are used during alignment of PGS:

1. A boresighted and operational BFV with PGS installed
2. Range knob set to 0 m
3. Aiming point of 25mm/coax reticle, for alignment of PGS to the 25 mm and coax weapons
4. Aiming point of TOW reticle, for alignment of PGS to the TOW weapon system

Note. Show Slide 13.

(c) PGS alignments must be performed for both reticles used in the weapon system. The sequence used is:

1. Alignment of PGS to TOW weapon system
2. Alignment of PGS to 25 mm weapon system (not required if TOW only mode is to be used)

Note. Show Slide 14.

(d) The following alignments of PGS to TOW weapon system must always be performed prior to PGS training and in the order listed.

1. **Cant alignment.** Adjustment of the transceiver unit to match the actual cant of the vehicle
2. **Laser alignment (TOW).** Alignment of the transceiver unit to the TOW weapon system
3. **TBOS gunner alignment (TOW).** Alignment of the TOW TBOS effects in the ISU.

5-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

4. **TBOS commander alignment (TOW).** Alignment of TOW TBOS effects in the ISUCE

Note. Show Slide 15.

(e) The following alignments must be performed prior to PGS training if the 25 mm and coax weapons are to be fired. Alignments must be performed in the order listed.

1. **Laser alignment (25 mm/coax).** Alignment of the transceiver unit to the 25 mm and coax weapon system
2. **TBOS gunner alignment (25 mm/coax).** Alignment of the AP, HE, and coax TBOS effects in the ISU.
3. **TBOS commander alignment (25 mm/coax).** Alignment of the AP, HE, and coax TBOS effects in the ISUCE

Notes. 1. The primary instructor now releases the student crews to their assigned assistant (small group) instructors for the practical exercise portion of this lesson.
2. Prior to students' arrival, ensure that an assistant instructor is assigned to each training station.
3. Direct students to their appropriate training station.
4. Each assistant instructor is to conduct a safety briefing for his small group IAW Appendix .
5. Whenever possible, have the students serve as demonstrators during small group instruction. Have one student read the procedures while another student performs the task. To ensure all students get equal hands-on time, rotate the reading and performance responsibilities.
6. The assistant instructor discusses and clarifies the procedures as required and reinforces the training objective.
7. Before switching PGS on, verify that each crew has a TDRS memory card set up IAW Appendix C.

c. **Preparation Prior to Alignment.**

Note. Alignment can be performed from 200 to 4000 m, but 1200 m is the preferred range.

(1) Place a target panel as close to 1200 m as possible.
(2) Install a retro reflector unit in center of target panel.

Note. Make sure you see only one retro reflector unit in the sight during alignment. If more than one retro reflector unit can be seen, alignment may be incorrect.

(3) Position vehicle on level ground.

5-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

d. **Startup Procedure.** PGS starts automatically when power is applied.

(1) **Power on.** Switch vehicle master power switch to ON position. PGS is now powered up.

(2) **Built-in test (BIT).**

(a) When the power is applied, an automatic BIT is performed. If an error is found, the intercom announces this and an error message is found on the control panel.

Note. If an error is discovered during the startup procedure, perform troubleshooting IAW Chapter 3 of TM 9-6920-710-12&P-1.

Warning. Ensure that vehicle master power switch and turret power switch are in OFF position when corrective actions are performed. Failure to follow this warning may result in injury to personnel or damage to equipment if cables are connected/disconnected with vehicle power switched on.

(b) BIT is automatically performed when the simulator is powered up. BIT is conducted continuously until master power is switched off.

(c) After completion of a successful BIT, data from the TDRS memory card is downloaded into the system. A pop-up screen informs the operator when data is being downloaded.

e. **Setup of Control Panel.** The control panel display screen can be adjusted for different light conditions. To adjust, select the main function SU with up or down arrows and press ENTER.

(1) **Backlight adjustment.** Select BL and press ENTER. Use left or right arrows to switch backlight on or off. Save setting with ENTER.

(2) **Contrast adjustment.** Select CO and press ENTER. Use left or right arrows to increase or decrease contrast of display. Save setting with ENTER.

f. **Alignment TOW.** To access the alignment menus, select AT (alignment TOW) and press ENTER. A series of informational at pop-up screens appears.

Note. The following vehicle setting must be used during all steps of the alignment of PGS to the TOW weapon system.

(1) **Vehicle setup during TOW alignment.**

(a) Place turret drive switch in POWER MODE position.

5-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

(b) Select high magnification on ISU. Press ENTER to continue.

(c) Raise TOW launcher. Press ENTER to continue.

(d) Select TOW on TOW control box.

Note. Ensure a missile is present. If not present, upload one from hull.

(e) Select tube 1 on TOW control box. Press ENTER to continue.

(2) **Cant alignment.** Cant alignment aligns the cant of the transceiver unit with the cant of the vehicle. This ensures that projectiles fall correctly in relation to the ground plane.

(a) Park vehicle so that vehicle level indicator indicates level.
(b) Place weapon control panel ARM-SAFE-RESET switch in ARM position.
(c) Rotate turret until slope indicator bubble is positioned inside inner blue ring.
(d) Select CA (cant alignment) and press ENTER.
(e) Cant angle of transceiver unit is displayed on control panel.
(f) Have crew member lower transceiver unit locking handle and slowly rotate transceiver unit until control panel displays cant angle of 0° ±5° and CANT OK is displayed. Raise transceiver unit locking handle to locked position and press ESC.

(3) **Laser alignment (TOW).** Laser alignment aligns the BFV's line of sight (LOS) for the TOW weapon system with that of the transceiver unit.

Notes. 1. Laser alignment can be performed at 200 to 4000 m, but 1200 m is the preferred range.
2. Ensure that only one retro reflector unit is visible within field of view.
3. During this step, the gunner aims at the actual retro reflector unit, not the center of the panel target.

(a) Select LA (laser alignment) and press ENTER.
(b) Using gunner's controls, lay TOW reticle on the center of retro reflector unit mounted on the target panel.
(c) Select R (reset) and press ENTER to reset old laser alignment values.
(d) Select M (measure) and press ENTER. This activates the first laser alignment measurement.
(e) Press ENTER a minimum of 3 times to allow PGS to calculate an average value of the alignment measurements.
(f) Select S (Save) and press ENTER to save alignment.
(g) Press ESC.

5-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

(4) **TBOS gunner alignment (TOW).** TBOS gunner alignment (TOW) aligns the TOW visual effects into the ISU.

Note. Demonstrate to each student how the TBOS reticle is positioned on the TOW reticle when aligned correctly.

(a) Look through ISU. Adjust focus of ISU picture.
(b) Select a target with a dark background to allow for better observation of TBOS effects.

(c) Select TG (TBOS gunner alignment) and press ENTER.
(d) Focus reticle pattern using TBOS gunner's eyepiece unit focus knob.
(e) Select R (Reset) and press ENTER to remove old alignment values.
(f) Select AL (align TBOS) and press ENTER to start.
(g) Perform rotation alignment. Rotate reticle pattern until aligned with reticle using up/down arrows. The reticle pattern is properly positioned when horizontal and azimuth lines of sight and boresight cross are parallel and center line of reticle pattern is pointing at bottom of sight.
(h) Press ENTER to save and continue.
(i) Perform elevation alignment. Using up/down arrows, adjust position of TBOS dot until level with reticle aiming point.
(j) Press ENTER to save and continue.
(k) Perform azimuth alignment. Adjust position of TBOS dot until dot is on reticle aiming point.
(l) Press ENTER to save.

Note. After ENTER is pressed, the TBOS alignment reticle is displayed. If not properly aligned with sight reticle, repeat steps (e) through (l).

(m) Exit menu by pressing ESC.

(5) **TBOS commander alignment (TOW).** This aligns the TOW visual effects into the ISUCE.

(a) Look through ISUCE. Adjust focus of ISUCE picture.
(b) Select a target with a dark background to allow for better observation of TBOS effects.
(c) Select TC (TBOS commander alignment) and press ENTER.
(d) Focus reticle pattern using TBOS commander's eyepiece unit focus knob.
(e) Select R (Reset) and press ENTER to remove old alignment values.
(f) Select AL (align TBOS) and press ENTER to start.
(g) Perform rotation alignment. Rotate reticle pattern until aligned with reticle using up/down arrows. The reticle pattern is properly positioned

when horizontal and azimuth lines of sight and boresight cross are parallel and center line of reticle pattern is pointing at bottom of sight.
(h) Press ENTER to save and continue.
(i) Perform elevation alignment. Using up/down arrows, adjust position of TBOS dot until level with reticle aiming point.
(j) Press ENTER to save and continue
(k) Perform azimuth alignment. Adjust position of TBOS dot until dot is on reticle aiming point.
(l) Press ENTER to save.

Note. After ENTER is pressed, the TBOS alignment dot is displayed. If not properly aligned, repeat steps (e) through (l).

(m) Press ESC to return to main menu.

Note. Alignment gun is not required if the 25 mm gun and coax weapons will not be fired using PGS.

g. **Gun Alignment.** To access the alignment menu for the 25 mm gun and coax weapons, select AG (alignment gun) and press ENTER. A series of informational pop-up screens appears.

Note. The following vehicle setting must be used during all steps of the alignment of PGS to the 25 mm/coax weapon systems.

(1) **Vehicle setup during gun alignment.**

(a) Place turret drive switch in POWER MODE position.
(b) Select high magnification on ISU. Press ENTER to continue.
(c) Set range knob to 0 m.
(d) Select HE SS on weapon control box. Press ENTER to continue.

(2) **Laser alignment (GUN).** Laser alignment aligns the BFV's line of sight (LOS) for the 25 mm and coax weapon systems with the transceiver unit's LOS.

Notes. 1. Laser alignment can be performed from 200 to 4000 m, but 1200 m is the preferred range.
2. Ensure that only one retro reflector unit is visible within field of view.
3. During this step, the gunner aims at the actual retro reflector unit, not the center of the panel target.

(a) Select LA (laser alignment) and press ENTER.

(b) Using gunner's controls, lay aim point of 25 mm on the center of the retro reflector unit mounted on target panel.
(c) Select R (reset) and press ENTER to reset old laser alignment values.
(d) Select M (measure) and press ENTER. This activates the first laser alignment measurement.
(e) Press ENTER a minimum of 3 times to allow PGS to calculate an average value of the alignment measurements.
(f) Select S (save) and press ENTER to save alignment.
(g) Press ESC.

(3) **TBOS gunner alignment (GUN).** This is the alignment of the AP, HE, and 7.62 mm visual effects into the ISU.

Note. Demonstrate to each student how the TBOS reticle is positioned on the 25 mm/coax reticle when aligned correctly.

(a) Look through ISU.
(b) Select a target with a dark background to allow for better observation of TBOS effects.
(c) Set TG (TBOS gunner alignment) and press ENTER.
(d) Select R (reset) and press ENTER to remove old alignment values.
(e) Select AL (align TBOS) and press ENTER to start.
(f) Perform rotation alignment. Rotate reticle pattern until aligned with reticle using up/down arrows. The reticle pattern is properly positioned when horizontal and azimuth lines of sight and boresight cross are parallel and center line of reticle pattern is pointing at bottom of sight.
(g) Press ENTER to continue.
(h) Perform elevation alignment. Using up/down arrows, adjust position of TBOS dot until dot is level with reticle aiming point.
(i) Press ENTER to save and continue.
(j) Perform azimuth alignment. Using left/right arrows, adjust position of TBOS dot until dot is on reticle aiming point.
(k) Press ENTER to save.

Note. After ENTER is pressed, the TBOS alignment reticle is displayed. If not properly aligned with sight reticle, repeat steps (d) through (k).

(l) Press ESC.

(4) **TBOS commander alignment (GUN).** This is the alignment of the AP, HE, and 7.62 mm visual effects into ISUCE.

5-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

(a) Look through ISUCE.
(b) Select a target with a dark background to allow for better observation of TBOS effects.
(c) Select TC (TBOS commander alignment) and press ENTER.
(d) Select R (reset) and press ENTER to remove old alignment values.
(e) Select AL (align TBOS) and press ENTER to start.
(f) Perform rotation alignment. Rotate reticle pattern until aligned with reticle using up/down arrows. The reticle pattern is properly positioned when horizontal and azimuth lines of sight and boresight cross are parallel and center line of reticle pattern is pointing at bottom of sight.
(g) Press ENTER to continue.
(h) Perform elevation alignment. Using up/down arrows, adjust position of TBOS dot until dot is level with reticle aiming point.

(i) Press ENTER to save and continue.
(j) Perform azimuth alignment. Using left/right arrows, adjust position of TBOS dot until dot is on reticle aiming point.
(k) Press ENTER to save.

Note. After ENTER is pressed, the TBOS alignment dot is displayed. If not properly aligned, repeat steps (d) through (k).

(l) Press ESC.

e. **Alignment Verification.** After completing PGS alignment procedures, verify that the alignment is correct.

(1) **Verification AB.** Fire an AP round at the retro reflector unit used for alignment. Verify that TBOS effects and hit result are correct.
(2) **Verification HE.** Fire an HE round at the retro reflector unit used for alignment. Verify that TBOS effects and hit result are correct.

Note. A target positioned within 900 m of the BFV must be used to register a coax hit.

(3) **Verification COAX.** Fire coax rounds at retro reflector unit used for alignment. Verify that TBOS effects and hit result are correct.
(4) **Verification TOW.** Fire a TOW missile at retro reflector unit used for alignment. Verify that TBOS effects and hit result are correct.

5-3. TEST. (15 minutes/test)

Note. See Appendix D.

5-4. FINAL REVIEW. (5 minutes)

a. **Student Questions.**

Note. Show Slide 16.

b. **Summary of Main Teaching Points.**

(1) Startup procedures.
(2) System alignment.
(3) Alignment verification.

Note. Show Slide 17.

c. **Closing Statement.** To achieve the desired training result with PGS, you must be able to correctly conduct startup, system alignment, and alignment verification of PGS to the BFV turret weapons.

APPENDIX A
TO LESSON PLAN 5

STARTUP AND ALIGNMENT

TOOLS, EQUIPMENT, AND MATERIALS

Listed equipment is one per vehicle crew, except as noted.

1. M2/M3 BFV with PGS installed
2. TM 9-6920-710-12&P-1
3. Boresight panel or target panel with retro reflector unit (one per class)
4. TDRS memory card programmed IAW Appendix C
5. TDRS computer unit (one per class)
6. Training area with a minimum of 1200 m of maneuver space

APPENDIX B
TO LESSON PLAN 5

STARTUP AND ALIGNMENT

SAFETY

Listed general safety regulations are to be strictly enforced during the performance of this lesson.

1. Mount and dismount vehicle over left front or through the back ramp.
2. Maintain 3 points of contact while on top of vehicle.
3. No smoking within 50 m of vehicle.
4. Do not go over or under gun barrel.
5. LASER SAFETY: Do not view transceiver unit with optics from a distance of 25 m or closer.
6. Ensure turret traverse lock is engaged before entering turret or working in or around turret.
7. Ensure vehicle master power switch and turret power switch are in OFF position before connecting or disconnecting cables.
8. No cables should be connected or disconnected by untrained personnel.
9. Ensure proper hearing protection is worn when using pyrotechnics.
10. If TOW ATWESS device is used, ensure area is clear 50 m to the rear and 25 m to the sides.

APPENDIX C
TO LESSON PLAN 5

STARTUP AND ALIGNMENT

TDRS MEMORY CARD SETUP

The TDRS memory card used for the practical exercise (PE) part of this lesson has been set up with the following data. Each crew is given a card prior to the PE portion of class.

Application:	M2	M3
Range:	Select range used	Select range used
New Ammo:	Yes	Yes
First Insert Only:	No	No
Main Weapon:		
AP Turret:	70 rounds	70 rounds
HE Turret:	230 rounds	230 rounds
AP Hull:	120 rounds	240 rounds
HE Hull:	480 rounds	960 rounds
Load Time:	0 seconds	0 seconds
Upload Time:	60 seconds	60 seconds
COAX Weapon:		
7.62 Turret:	800 rounds	800 rounds
7.62 Hull:	1540 rounds	3750 rounds
Upload Time:	60 seconds	60 seconds
Missile Weapon:		
Tube 1 Turret:	1 missile	1 missile
Tube 1 Hull:	3 missiles	5 missiles
Tube 2 Turret:	1 missile	1 missile
Tube 2 Hull:	2 missiles	5 missiles
Upload Time:	60 seconds	60 seconds
Exercise type:	Panel gunnery	Panel gunnery
Tracer:		
Tracer on:	Yes	Yes
Burst on:	Yes	Yes
Obscuration:	1 second	1 second

Presentation:		
Audio:	Yes	Yes
Control Panel Presentation:	Yes	Yes
Firing:	Full scale	Full scale
Dispersion:	No	No
User Data:	Input crew data	Input crew data

APPENDIX D
TO LESSON PLAN 5

STARTUP AND ALIGNMENT

TEST ADMINISTRATION GUIDE

D-1. TASK.

Administer test, *Alignment of PGS.*

D-2. CONDITIONS.

Given a fully operational BFV with BII and PGS installed.

D-3. STANDARDS.

The crewman will correctly align PGS to the vehicle within 10 minutes.

D-4. PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED.

a. Evaluator (one per test station)
b. BFV with BII and PGS installed (one per test station)
c. Panel target at 1200 m with retro reflector unit installed
d. TM 9-2350-252-10-1/2 or TM 9-2350-284-10-1/2 (one set per test station)
e. TM 9-6920-710-12&P-1 (one copy per test station)
f. Scoring checklist of Appendix D (one copy for each crewman tested)

D-5. TEST PLANNING TIME.

Administrative time:	5 minutes
Test time:	10 minutes
TOTAL TIME (per crewman):	15 minutes

D-6. OTHER INFORMATION.

Before the crewman arrives, the evaluator will:

a. Position a panel target with a retro reflector unit at a distance of 1200 m
b. Ensure TM 9-2350-252-10-1/2 or TM 9-2350-284-10-1/2 is available
c. Ensure TM 9-6920-710-12&P-1 is available
d. RESET all PGS alignment values prior to arrival of each crewman
e. Have scoring checklist ready for crewman to be tested

D-7. INSTRUCTIONS TO STUDENT.

"The purpose of this test is to determine your ability to correctly align the PGS to the M2/M3 BFV. You will have 10 minutes to complete all steps. You must complete each step before beginning the next step. Your time will start when I announce 'BEGIN' and end when you announce 'FINISHED'. You may use TM 9-6920-710-12&P-1 during the test".

"Do you understand the requirements of this test?" (Answer questions)
"You may begin." (Start time)

ALIGNMENT OF PGS

Scoring Checklist

NAME _____ UNIT _____

GRADE _____ DUTY POSITION _____

	GO	NO GO
1. Safety precautions prior to alignment	_____	_____
Did crewman observe general safety regulations?	_____	_____
2. Vehicle setup during TOW alignment		
a. Turret drive switch set to POWER MODE	_____	_____
b .Magnification selector set to HIGH MAG	_____	_____
c. TOW launcher raised	_____	_____
d. TOW selected	_____	_____
e. Missile tube 1 selected	_____	_____
3. Cant alignment		
a. Turret rotated until vehicle level indicator indicates level	_____	_____
b. Cant on control panel adjusted within ±0.5° and CANT OK indicated on control panel	_____	_____
c. Transceiver unit handle locked after completed alignment	_____	_____
4. Laser alignment (TOW)		
a. Aiming point positioned on retro reflector unit	_____	_____
b. Minimum of 3 alignment measurements executed	_____	_____
c. Save correctly performed	_____	_____

	GO	NO GO
5. TBOS gunner alignment (TOW)		
a. "T" properly aligned within field of view	_____	_____
b. Dot positioned on aiming point	_____	_____
6. TBOS commander alignment (TOW)		
a. "T" properly aligned within field of view	_____	_____
b. Dot positioned on aiming point	_____	_____
7. Vehicle setup during gun alignment		
a. Turret drive switch set to POWER MODE	_____	_____
b. Magnification selector set to HIGH MAG	_____	_____
c. Range knob to 0 m	_____	_____
d. HE SS selected	_____	_____
8. Laser alignment (Gun)		
a. Aiming point positioned on retro reflector unit	_____	_____
b. Minimum of 3 alignment measurements executed	_____	_____
c. Save correctly performed	_____	_____
9. TBOS gunner alignment (Gun)		
a. "T" properly aligned within field of view	_____	_____
b. Dot positioned on aiming point	_____	_____
10 TBOS commander alignment (Gun)		
a. "T" properly aligned within field of view	_____	_____
b. Dot positioned on aiming point	_____	_____

	GO	NO GO	INITIALS
Crewman satisfactorily completed all requirements?	_____	_____	_____

EVALUATOR _____ DATE _____

REMARKS _____

APPENDIX E
TO LESSON PLAN 5

STARTUP AND ALIGNMENT

VIEWGRAPHS